

25



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,119	12/05/2001	Guo-Qing Wei	2001P22990 US	2766

7590 01/03/2005  
Siemens Corporation  
Intellectual Property Department  
186 Wood Avenue South  
Iselin, NJ 08830

EXAMINER

NAKHJAVAN, SHERVIN K

ART UNIT PAPER NUMBER

2621

DATE MAILED: 01/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/008,119	WEI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Shervin Nakhjavan	2621	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14, 22 and 23 is/are allowed.
- 6) ☒ Claim(s) 15-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 15-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 15, line 3, the phrase "the volume" and claim 16, line 1, the phrase "said images" seem to be referring to a previously cited volume and images which do not appear in the claims. Therefore, these citations are vague and confusing because, it is unclear what feature or element is further limited by this language.

Claims 17-21 variously depend from an indefinite base claim and are thus themselves indefinite.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 15 and 17-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Aylward et al. (US 6,690,816).

Art Unit: 2621

Regarding claim 15, Aylward teaches, a system for automatically detecting nodules from image data (Column 28, Lines 58-67, where an embodiment of detecting nodules from chest radiographs is discussed while the following steps teaching the invention is with respect to tubular object), the system comprising: a seed point generation unit (150) for examining the volume to generate a seed point (Column 7, Lines 26-30, wherein a tubular or volumetric object of interest is designated and a seed point is selected within it by the processing step 420 of figure 4 encompassed in unit 1520 of the system of Figure 15); a volume of interest generation unit (170) in signal communication with the seed point generation unit (150) for defining a volume of interest comprising the seed point (Column 7, Lines 26-30, wherein an object of interest is already defined prior to seed point selection); a volume projection unit (180) in signal communication with the volume of interest generation unit (170) for projecting 1-D curves indicative of shape (Column 6, Lines 24-42, where a 1-D curve projection corresponding to the detected central track of the tubular object is implemented with respect to its shape); and a volume projection unit (190) in signal communication with the volume unit (180) for detecting a nodule (Column 28, Lines 48-55, while a bowel obstruction detection is discussed with respect to processing of tubular object, nodule detection processing of a chest image is also within the scope of the teachings above with respect to teachings in Column 28, Lines 58-67);

Aylward teaches limitation of claim 17, said volume comprises a lung volume (Column 28, Lines 58-67);

Aylward teaches limitation of claim 18, said nodule comprises a vessel-feeding pulmonary nodule (Column 28, Lines 58-67);

Ayward teaches limitation of claim 19, system further comprising a CPU in signal communication with said volume projection analysis unit for examining said nodule (Figure 15, items 1520 and 1550 as volume projection analysis unit discussed above and CPU, respectively, are in communication with each other);

Ayward teaches limitation of claim 20, a display adapter in signal communication with the CPU for displaying said nodule (Figure 15, Item 1570); and an I/O adapter in signal communication with the CPU for recalling the shape features of the nodule (Figure 15, Item 1560 for recalling shape and other information from storage 1510 and 1530);

Ayward teaches limitation of claim 21, system further comprising a user interface adapter in signal communication with the CPU for receiving an external selection decision for seed point from a user (Column 7, Lines 37-40, wherein items 180 and 1590 are the user interface).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ayward et al. in view of Doi et al. (US 6,678,399).

Aywrdr teaches number of limitations of the claim however Ayward fails to teach the kind of images for processing. Doi teaches, images comprise high resolution, thin – slice (Column 5, Line 67 through Column 6, Line 5), multi-slice, computed tomography images (Column 12, Lines 27-32). It would have been obvious to an ordinary skilled person in the art to utilize the kind of imaging of Doi's system with Ayward because, the combination of high resolution, thin-slice and multi-slice in CT images help speed up scanning of the images and increases the system sensitivity in detecting lung nodules.

***Allowable Subject Matter***

7. The following is an examiner's statement of reasons for allowance: claims 1-14, 22 and 23 are allowed because, the prior art of record specifically Kaufman et al. (US 20030028401) does not teach *re-slicing* the volume of interest along the *principal viewing axes*, computing volume *projection curves* of the re-sliced volumes along the principal viewing axes and analyzing *the shapes* of the volume projection curves of claims 1, 22 and 23 combined with other features and elements of the claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Other prior art cited***

8. Prior art of record cited and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2621

The US Patent Application 20030095692 and US Patent Application 20030099390 variously teach nodule detection related to applicant's invention as claimed.

***Contact information***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (703) 306-5916. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

**Any response to this action should be mailed to:**

Assistant Commissioner for Patents  
Washington, DC 20231

**Or faxed to:**

**(703) 872-9306** for *formal* communications, please mark "**EXPEDITED PROCEDURE**"

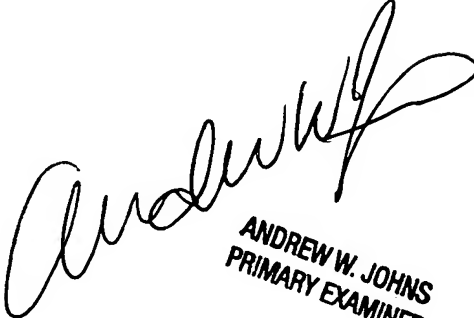
**or:**

for *informal* or *draft* communications; please label "**PROPOSED**" or "**DRAFT**".

**Hand delivered responses** should be brought to Crystal Park 2, 2121 Crystal drive, Arlington, VA, sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2700 customer service office **(703) 306-0377**.

Shervin Nakhjavan *S.N*  
Patent Examiner  
Group Art Unit 2621  
December 21, 2004.

  
**ANDREW W. JOHNS**  
**PRIMARY EXAMINER**